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Use of Automated Guided Vehicles (AGV) for Material Handling Applications

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Client: ORBIS Corporation, Monticello, IA

Problem Statement

- Conduct AGV (man-less forklift) research to understand the benefit versus the cost of implementing this technology with the intent to implement into warehouse
- The AGVs will travel from the stretch wrapper to the warehouse racking or truck staging area

Objectives

- Design an AGV system to move pallets throughout the facility
- Provide a quantitative Return on Investment (ROI) for the system
- Reduce the amount of man hours spent on material handling

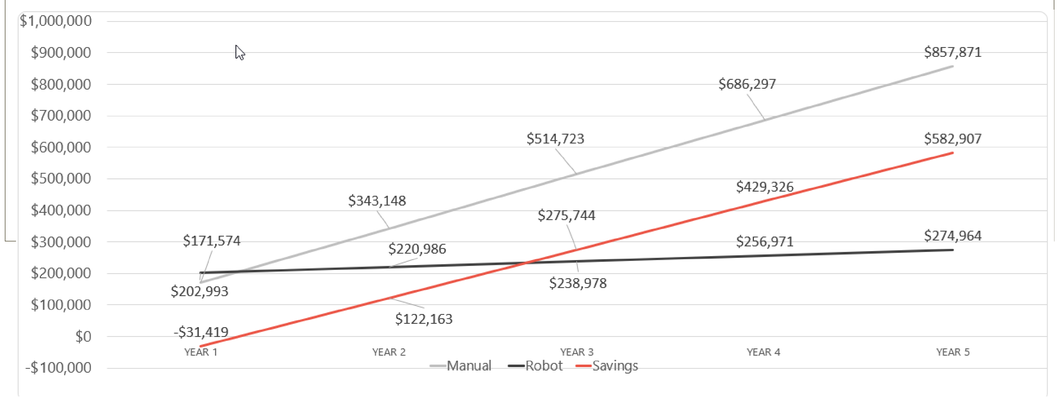
Constraints

- Budget: Based on cost savings and ROI
- Timeline: Completed by 4/1/2020
- Requirements: Must label pallets being moved to warehouse
- Criteria to be met: Must be compliant with OSHA regulation ANSI B56

Scope

- Recommendation of an automated guided vehicle system that transports materials within the ORBIS warehouse with a return on investment of two years or less

An Automated Guided Vehicle (AGV) performing a material handling task



Cost of manual versus robotic labor over a 5-year period. The intersection of the 'manual' and 'robotic' lines marks a 15.6 month return on investment

Methods/Approach

- Multiple site visits with client and AGV companies
- Phone conference calls with AGV companies for solutions and price points
- Created a spaghetti diagram to show paths that AGV would take
- Created a ROI to compared competitors' prices

Major Deliverables

- Annual savings per year in worker-hours
- Estimated cost
- Spaghetti diagram with distances
- All capital investment options identified with full costs over a 3-year period
- All pros and cons identified

Recommendations

- We recommend ORBIS to adopt Balyo's automated guided vehicle technology
- Implement full AGV units in 2021

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